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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|---|-------------|----------------------|---|-----------------------------|
| 10/580,336 | 05/24/2006 | Shun Takahashi | ITO-105-PCT | 5569 |
| 77464 | 7590 | 05/18/2009 | | |
| IPUSA, P.L.L.C 1054 31ST STREET, N.W. Suite 400 Washington, DC 20007 | | | EXAMINER WYROZEBSKI LEE, KATARZYNA I | |
| | | | ART UNIT 1796 | PAPER NUMBER |
| | | | NOTIFICATION DATE 05/18/2009 | DELIVERY MODE ELECTRONIC |

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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| | | | |
|------------------------------|---|---|--|
| Office Action Summary | Application No. 10/580,336 | Applicant(s) TAKAHASHI ET AL. | |
| | Examiner Katarzyna Wyrozewski | Art Unit 1796 | |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 January 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-20 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-20 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

In view of applicant's response dated 1/21/09 and amendment submitted therewith following office action is rendered final as necessitated. Applicant's amended instant claims to recite that the limitation that silicate and silane coupling agent are bonded to each other through substituted silyl group. In addition the applicants have added new claims reciting kanemite, makatite, magadiite and kenyaite as clays of the instant invention.

Double Patenting Rejection – Double Patenting rejection of record is not overcome and it is incorporated here by reference. Applicants attention is drawn to MPEP 804 where it is disclosed that “the specification can always be used as a dictionary to learn the meaning of a term in a patent claim.” *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438, 164 USPQ 619, 622 (CCPA 1970).

Consistent with the above underlined portion of the MPEP citation, attention is drawn to the definition of both clay and silane coupling agent. If the compounds of the co-pending application 11/628,625 then they will also read on the instant invention in same extent as the instant invention would read on the scope of co-pending invention.

Claim Rejections - 35 USC § 103

1. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. Claims 1-20 are rejected under 35 U.S.C. 103(a) as being unpatentable over MOHANTY (US 2003/0216496) in view of BARBEE (US 6,391,449).

The discussion of the disclosure of MOHANTY from paragraph 7 of the office action dated 10/23/2008 is incorporated here by reference. Newly added claims are still rejected by the disclosure of MOHANTY since the prior art does disclose a molded article.

The prior art of MOHANTY discloses use of exfoliated clay, however, it is silent with respect to the type of the clay or the components utilized to modify the clay.

With that in mind the prior art of BARBEE discloses nanocomposite composition for polyesters. The composition is utilized to make molded articles such as sheets or films.

Clays of BARBEE include natural clays such as montmorillonite, saponite, beidelite, hectorite, mica, magadite, kenyaite, laponite and the like, as well as synthetic equivalents thereof. Important aspect of the clays of BARBEE is that they are all swellable and capable of being exfoliated (col. 9, line 59-67).

Clays of BARBEE are first treated with onium compound. Organic cations are described in col. 11 of BARBEE and are utilized to render clay compatible with polymeric components as well as for increasing basal spacing between clay platelets, which in turn allows incorporation of polymeric component.

Art Unit: 1796

Clays of BARBEE are also treated with silane compound. Silane compounds of BARBEE were previously disclosed in WO 93/11190, which disclosure is incorporated therein by reference. As per teachings of 93/11190 silanes are described beginning page 18, and include functional groups such as hydroxyl, halogens, epoxy, acyloxy, amine and the like. Examples on pages 18-19 further disclose use of amines, isocyanates, vinyl groups and the like. More specific examples include vinyl trimethoxysilane, aminopropyl triethoxy silane isocyanatopropyl trimethoxysilane, di and tri-methoxyamines, di allyl compounds and the like. The alkyl groups of LAN therefore contain at least 3 carbon atoms.

Silane of 93/11190 has to satisfy formula $X_nSiR_{(4-n-m)}R^1_m$, wherein R^1 is defined on page 12 as alkyl, m is 0-2, n is 1-3 and wherein alkyl group as defined on page 11 has 1-4 carbon atoms. Therefore silanes having two alkyl groups are enabled by the prior art of BARBEE. R group is one having any number of carbon atoms (see page 11) that is substituted, such that they can contain a functional group capable of reacting with polymeric component substitution is viewed as Z moiety and includes esters, amides, epoxy, amines and the like (page 12).

Clays modified with components disclosed in BARBEE render clays more compatible with polymeric component. Such modified clays also have increased basal spacing with allows for intercalation of polymeric matrix and eventual exfoliation, which is what MOHANTY teaches is required for use in its invention.

In the light of the above disclosure, it would have been obvious to one having ordinary skill in the art at the time of the instant invention to utilize the teachings of BARBEE as evidenced in 93/11190 in the teachings of MOHANTY and thereby arrive at the instant

Art Unit: 1796

invention. Such modification would provide exfoliated clay otherwise required by the teachings of MOHANTY.

Response to the Applicant's Arguments – Applicant's arguments are considered moot since the amendment contained new issues and considerations that required new search and new prior art. Specifically, the amendment to independent claim 1, required clay to be organically modified before it was treated with coupling agents. Based on applicant's definition of "organically modified" presence of onium compound is now required. The prior art of record as stated in FOAM did not teach organic modification since such as not within the scope of the claims. Organic modification changes the nature of the clay and therefore new prior art had to be identified.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Katarzyna Wyrozebski whose telephone number is (571) 272-1127. The examiner can normally be reached on Mon-Thurs 8:30 AM-2:30 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, David Wu can be reached on (571) 272-1114. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Art Unit: 1796

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Katarzyna Wyrozebski/
Primary Examiner, Art Unit 1796
May 11, 2009